

299-E25-21 (A4768)
Log Data Report

Borehole Information:

Borehole: 299-E25-21 (A4768)			Site: 216-A-37 Crib		
Coordinates (WA St Plane)		GWL¹ (ft): 280.5	GWL Date: 04/11/07		
North (m)	East (m)	Drill Date	TOC Elevation	Total Depth (ft)	Type
135558.408	576063.016	05/83	680.83 ft	295	Cable tool

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Welded Steel	2.6	8 5/8	8	5/16	2.6	295

Borehole Notes:

The logging engineer measured the steel casing diameter and stickup using a steel tape. A 2 ft diameter grout pad surrounds the casing.

The driller's log indicates a temporary 12-in. surface casing was in place to 30 ft. An 8-in. casing was placed to 300 ft and was perforated from 270 to 293 ft. A cement plug was placed in the bottom of the 8-in. casing to approximately 295 ft. Grout was emplaced in the annulus between the 8- and 12-in. casings as the 12-in. casing was removed. The "Well Construction and Completion Summary As-Built" claims grout was also emplaced around the 8-in. casing to 100 ft. This assertion cannot be confirmed by the driller's log and appears to be unlikely.

Log data acquisition is referenced to the top of casing.

Logging Equipment Information:

Logging System: Gamma 4 N	Type: HPGe (60%) SN: 45-TP22010A
Effective Calibration Date: 02/14/07	Calibration Reference: HGLP-CC-009
	Logging Procedure: HGLP-MAN-002, Rev. 0

Logging System: Gamma 4 H	Type: NMLS SN: H310700352
Effective Calibration Date: 11/22/06	Calibration Reference: HGLP-CC-002
	Logging Procedure: HGLP-MAN-002, Rev. 0

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	1	2	3	4 Repeat	
Date	04/11/07	04/12/07	04/13/07	04/13/07	
Logging Engineer	Spatz	Spatz	Spatz	Spatz	
Start Depth (ft)	115.0	190.0	295.0	165.0	
Finish Depth (ft)	2.0	114.0	189.0	135.0	
Count Time (sec)	100	100	100	100	
Live/Real	R	R	R	R	
Shield (Y/N)	N	N	N	N	
MSA Interval (ft)	1.0	1.0	1.0	1.0	

HGLP-LDR-073

Log Run	1	2	3	4 Repeat
ft/min	NA	NA	NA	NA
Pre-Verification	DN691CAB	DN701CAB	DN711CAB	DN711CAB
Start File	DN691000	DN701000	DN711000	DN711107
Finish File	DN691113	DN701076	DN711106	DN711137
Post-Verification	DN691CAA	DN701CAA	DN711CAA	DN711CAA
Depth Return Error (in.)	0	- 1	N/A	- 1.5
Comments	Fine gain adjustment after files -002, -015, and -061	Fine gain adjustment after files -009, -021, and -062	Fine gain adjustment after files -005, -019, -053 and -085	No fine gain adjustment

Neutron Moisture Logging System (NMLS) Log Run Information:

Log Run	5	6	3 Repeat
Date	04/15/07	04/15/07	04/15/07
Logging Engineer	Spatz	Spatz	Spatz
Start Depth (ft)	279.50	198.0	170.0
Finish Depth (ft)	197.0	95.0	150.0
Count Time (sec)	15	15	15
Live/Real	R	R	R
Shield (Y/N)	N	N	N
MSA Interval (ft)	0.25	0.25	0.25
ft/min	NA	NA	NA
Pre-Verification	DH502CAB	DH502CAB	DH502CAB
Start File	DH502000	DH502331	DH502744
Finish File	DH502330	DH502743	DH502824
Post-Verification	DH502CAA	DH502CAA	DH502CAA
Depth Return Error (in.)	N/A	N/A	- 2.5
Comments	None	Subdirectory change	None

Logging Operation Notes:

Logging was conducted with a centralizer on each sonde and measurements are referenced to top of casing. Moisture data were acquired from 100 ft to just above the groundwater level at 280 ft. It was presumed grout was behind the 8-in. casing to 100 ft and that moisture data would not be accurate in this interval.

Analysis Notes:

Analyst:	P.D. Henwood	Date:	05/10/07	Reference:	GJO-HGLP 1.6.3, Rev. 0
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Pre-run and post-run verifications for the logging systems were performed before and after the day's data acquisition. The acceptance criteria were met.

A casing correction for a 5/16-in. thick casing was applied to the SGLS data. NMLS data were corrected for an 8-in. borehole.

SGLS spectra were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Concentrations were calculated with an EXCEL worksheet template identified as G4NFeb07.xls using an efficiency function and corrections for casing, dead time, and water as determined from annual calibrations. The NMLS count rate data were converted to percent volumetric moisture.

Results and Interpretations:

No significant contamination was detected in this borehole. A few isolated occurrences of Cs-137 near the MDL are the result of statistical fluctuations.

Natural gamma (KUT) shows evidence of stratigraphic variability.

The KUT repeat log data exhibit very good repeatability.

List of Log Plots:

Depth Reference is top of casing

Depth Scale - 20 ft/inch except for repeat logs

Manmade Radionuclides (2 pages)

Natural Gamma Logs (2 pages)

Combination Plot (3 pages)

Combination Plot (0-300 ft)

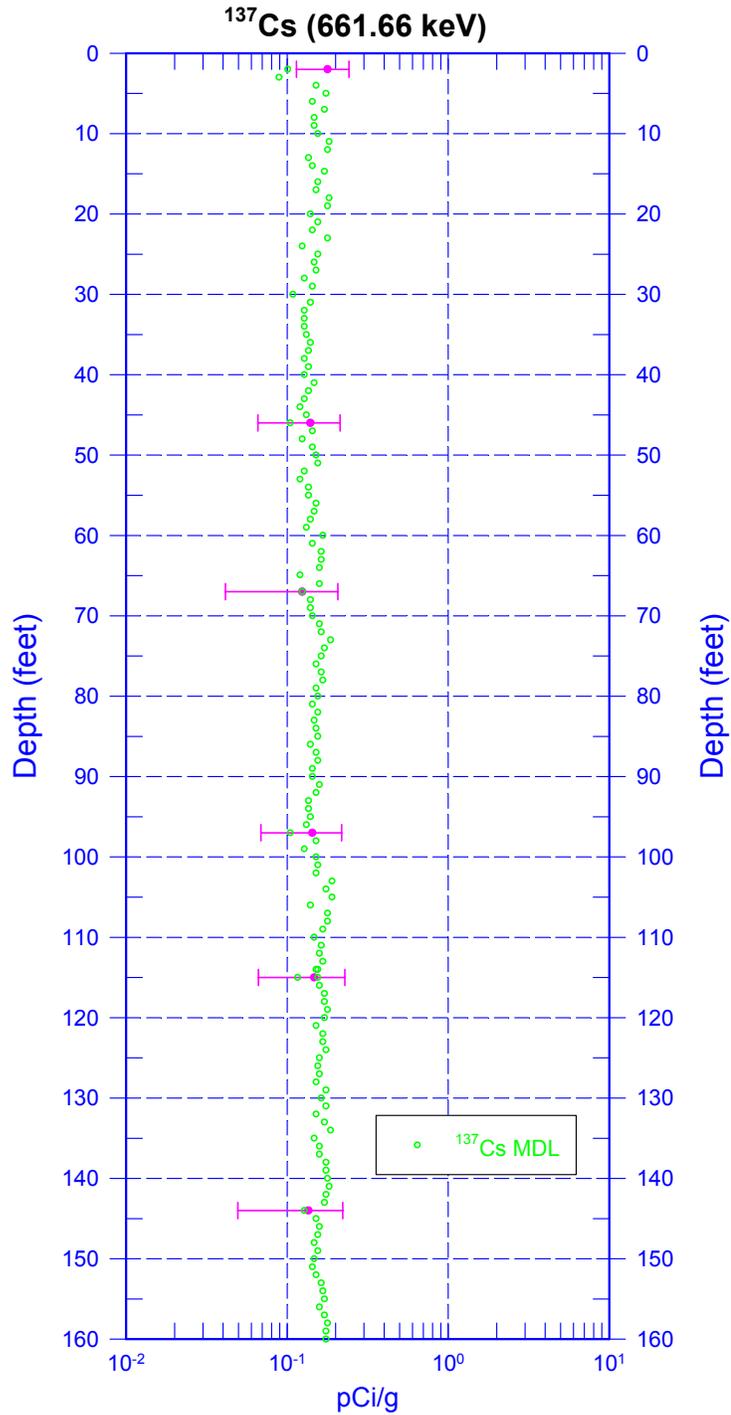
Total Gamma, Dead Time & Moisture (2 pages)

Repeat of Natural Gamma Logs

Repeat of Moisture

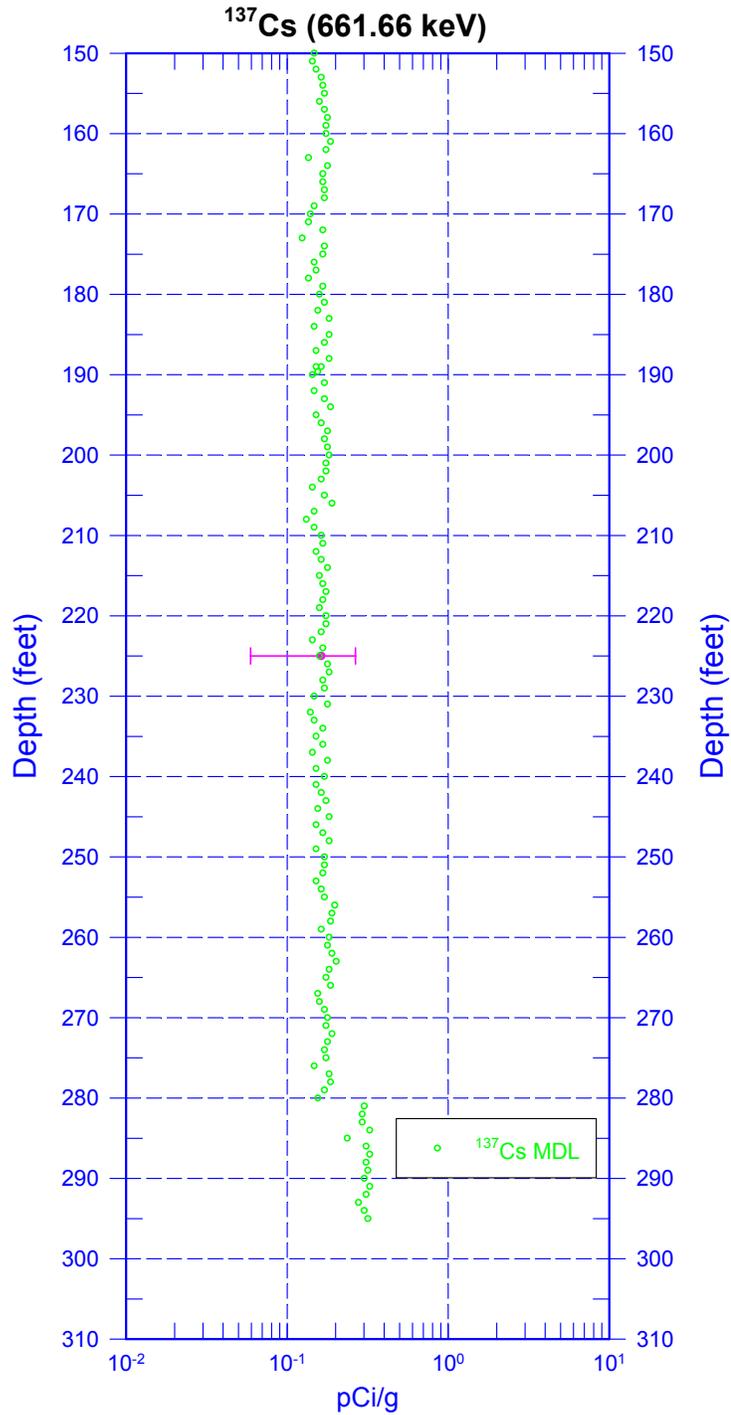
¹ GWL – groundwater level

299-E25-21 (A4768) Manmade Radionuclides



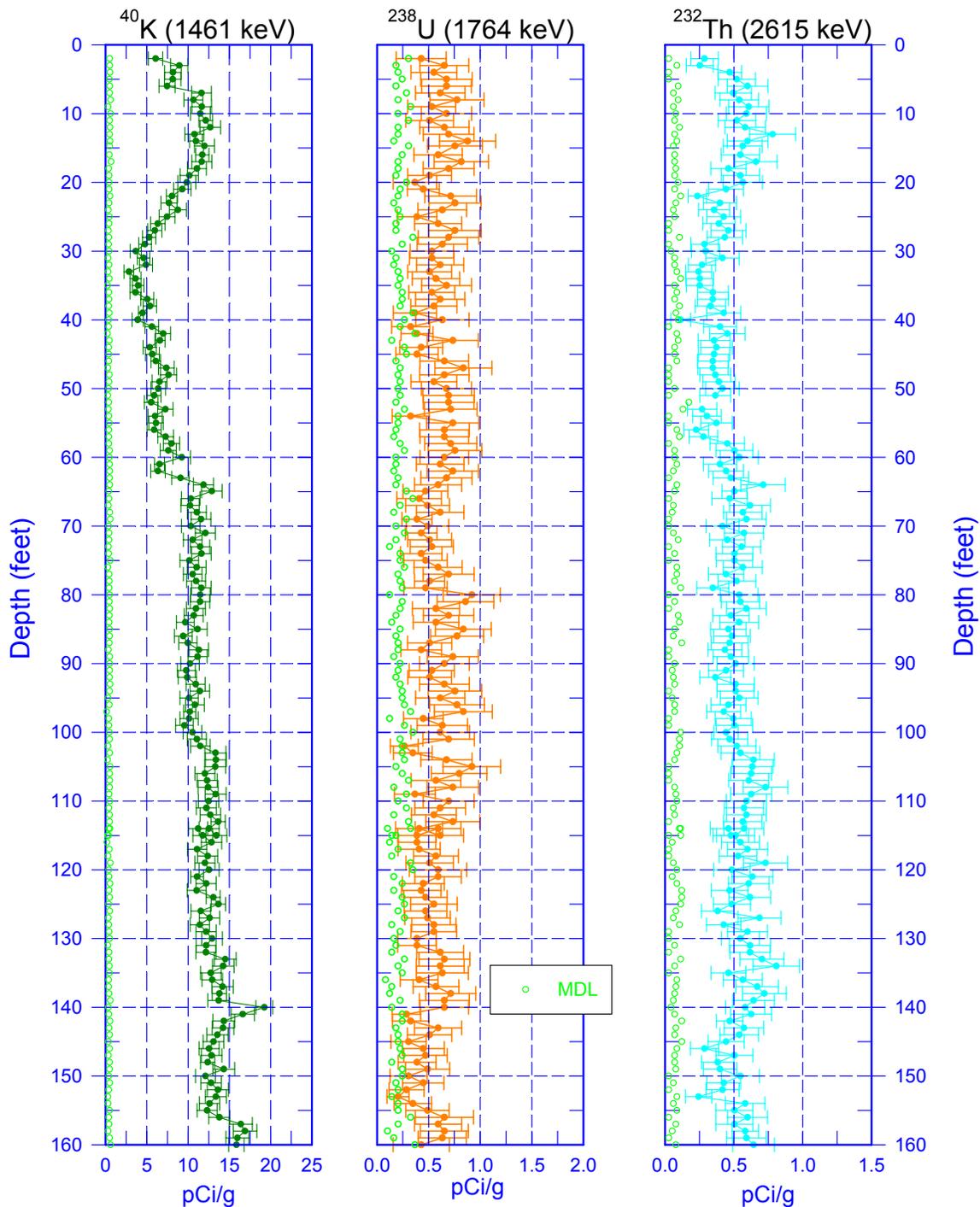
Zero Reference - Top of Casing

299-E25-21 (A4768) Manmade Radionuclides



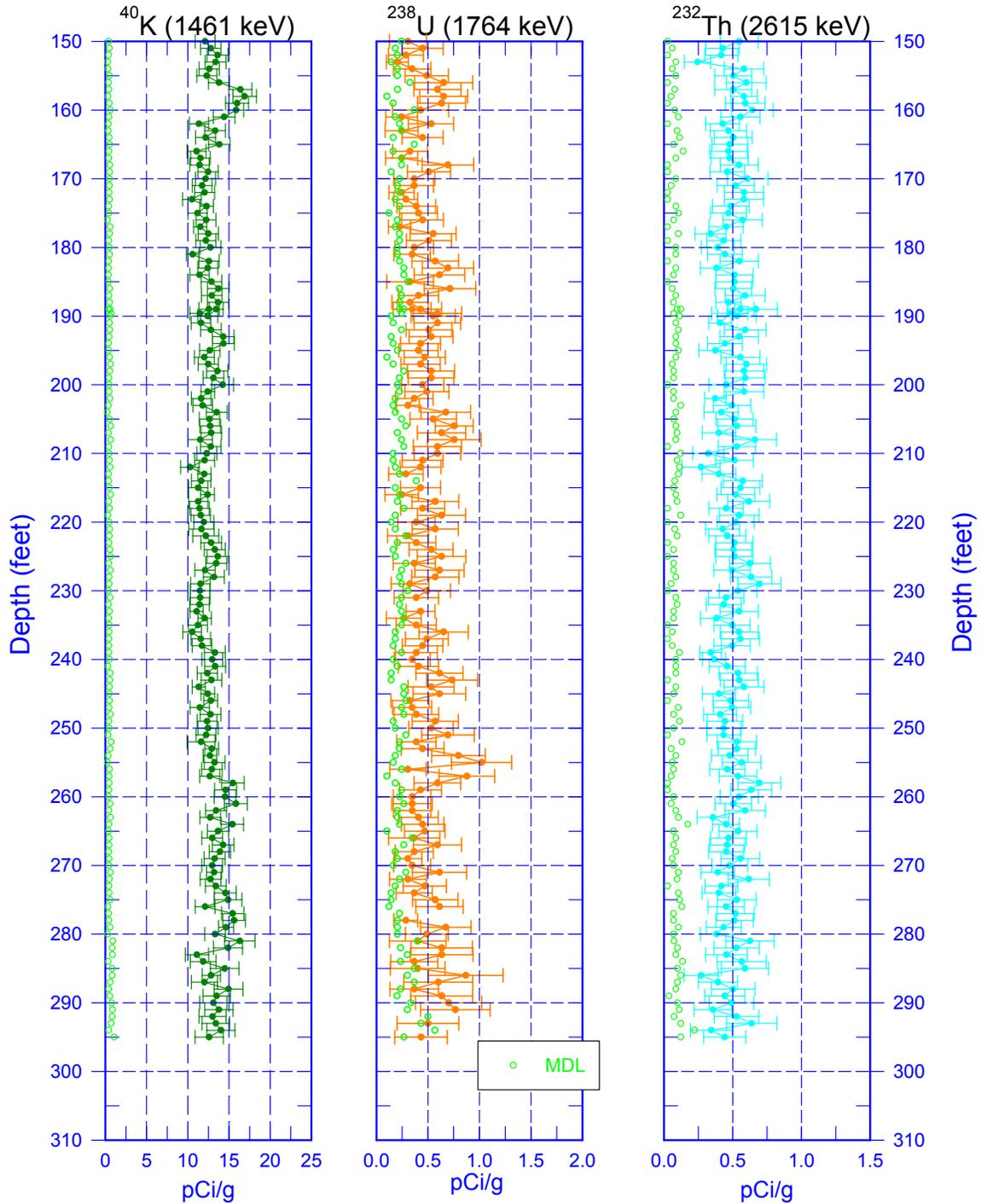
Zero Reference - Top of Casing

299-E25-21 (A4768) Natural Gamma Logs

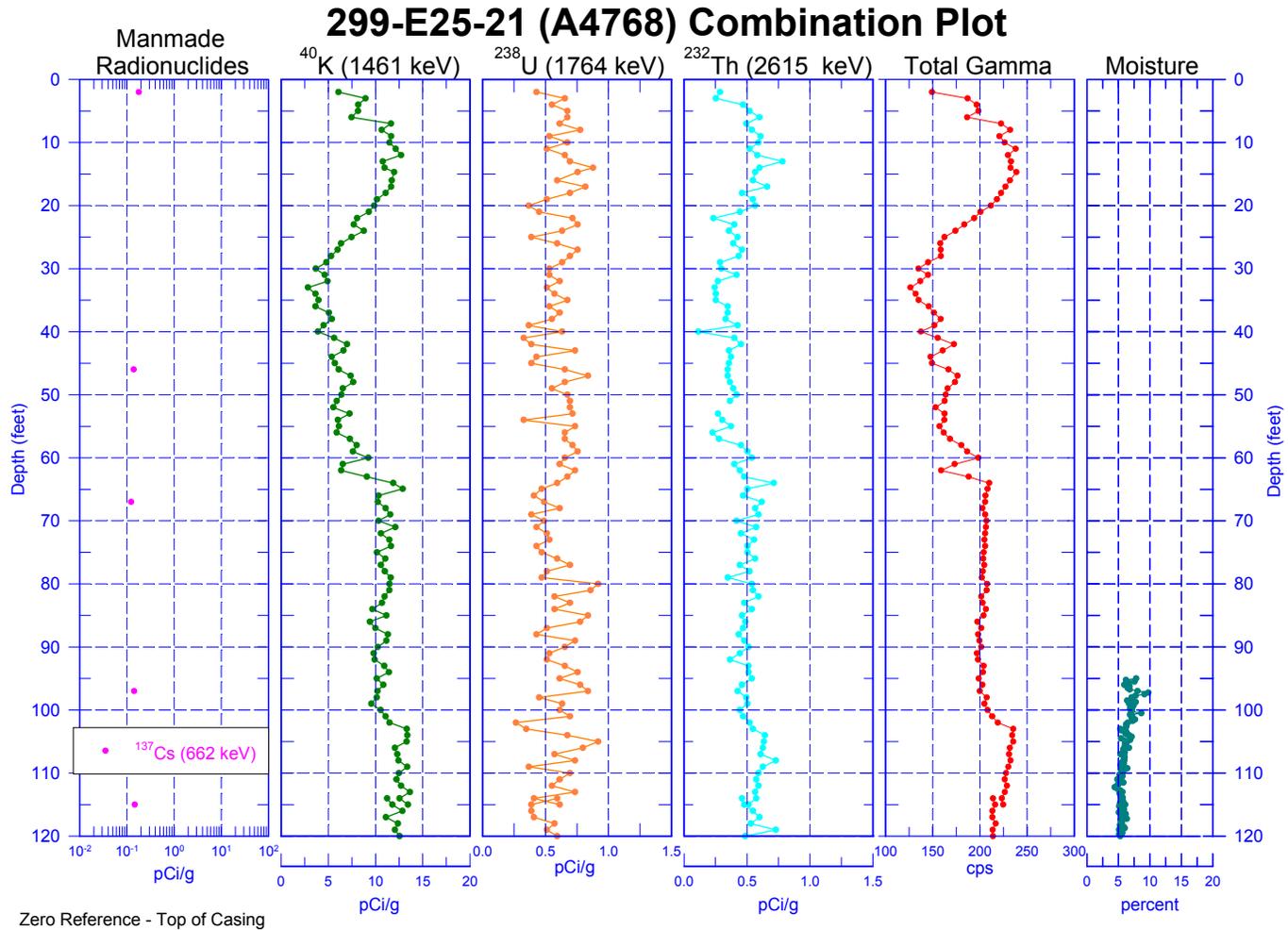


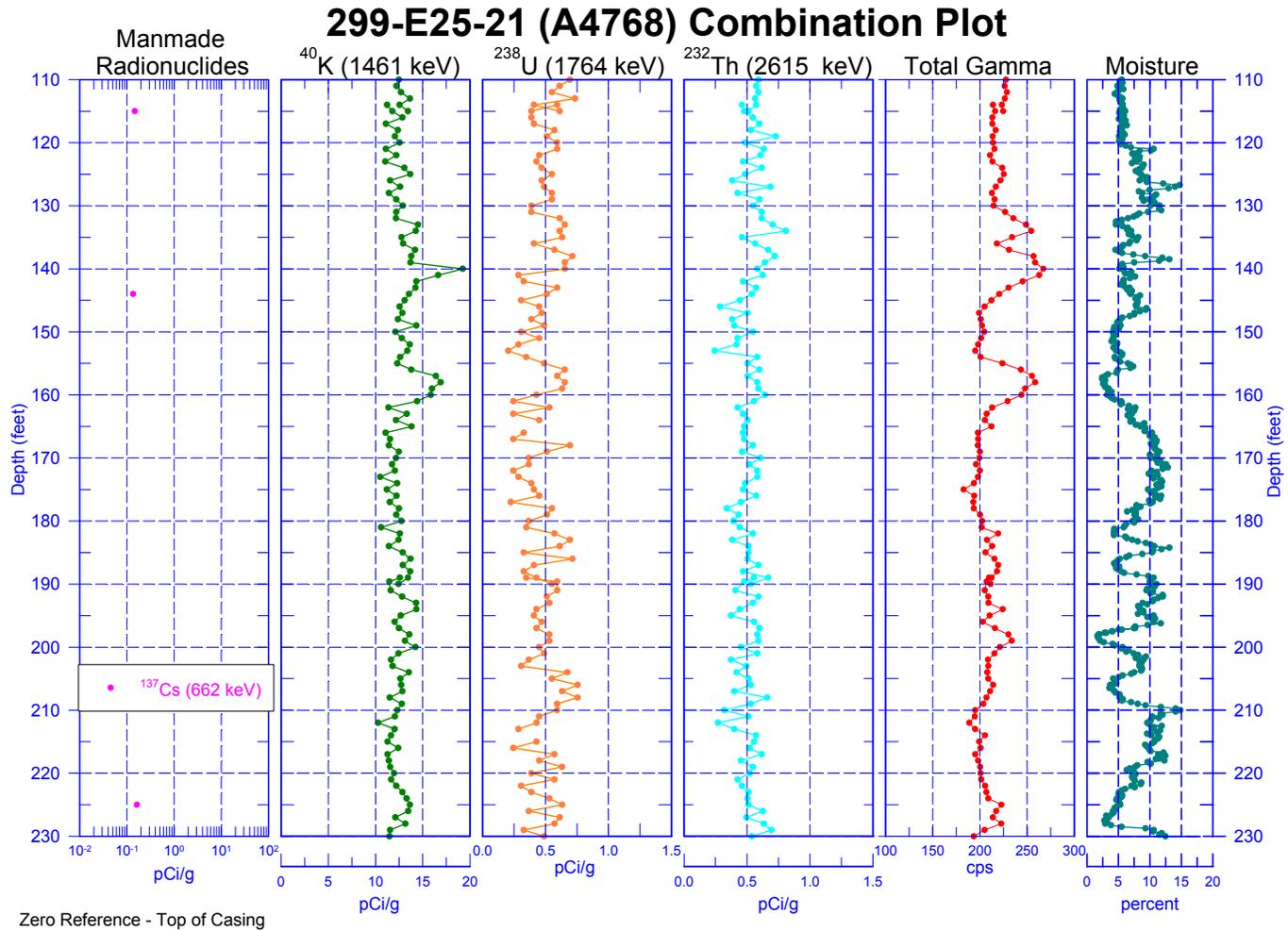
Zero Reference = Top of Casing

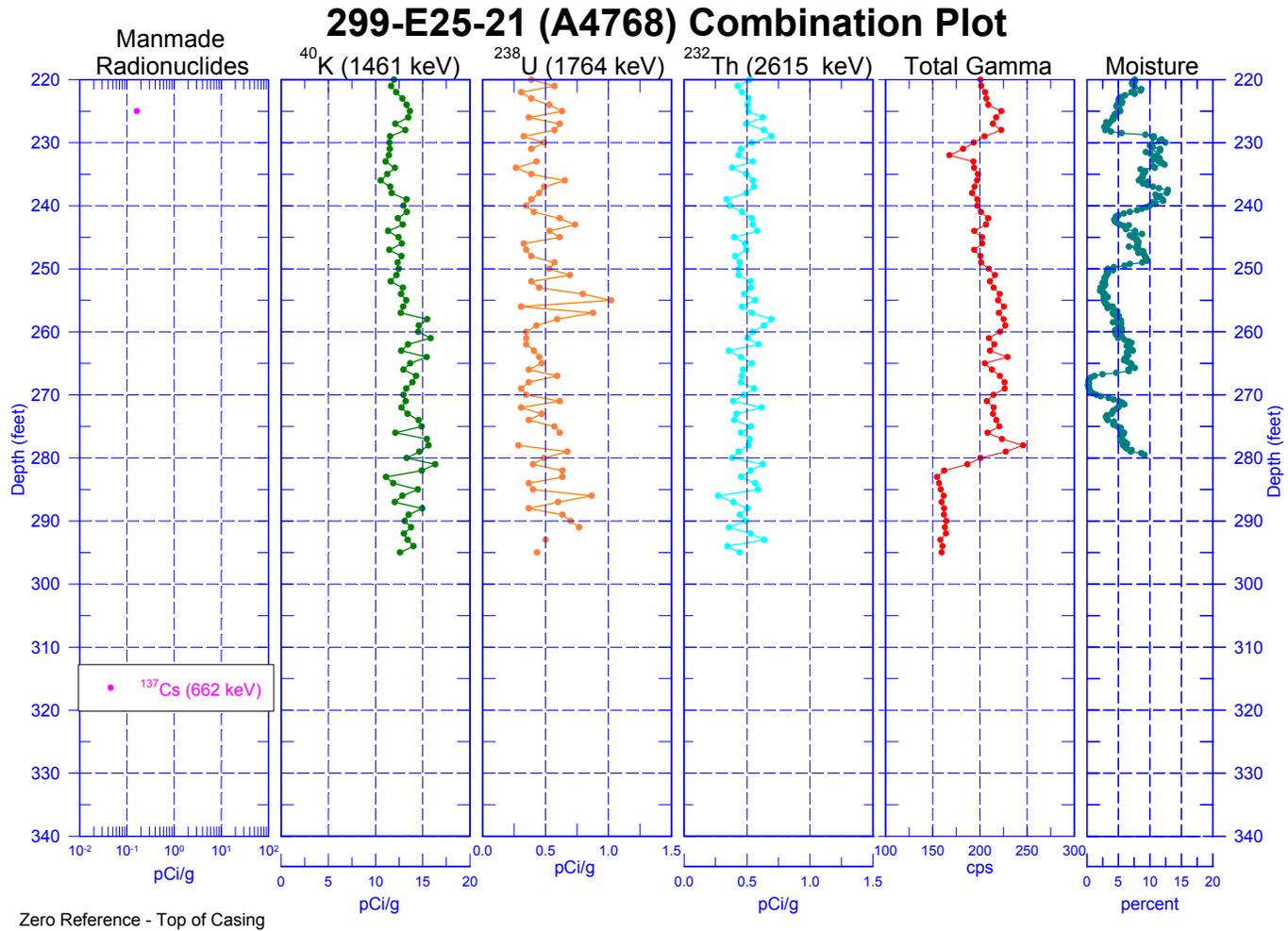
299-E25-21 (A4768) Natural Gamma Logs



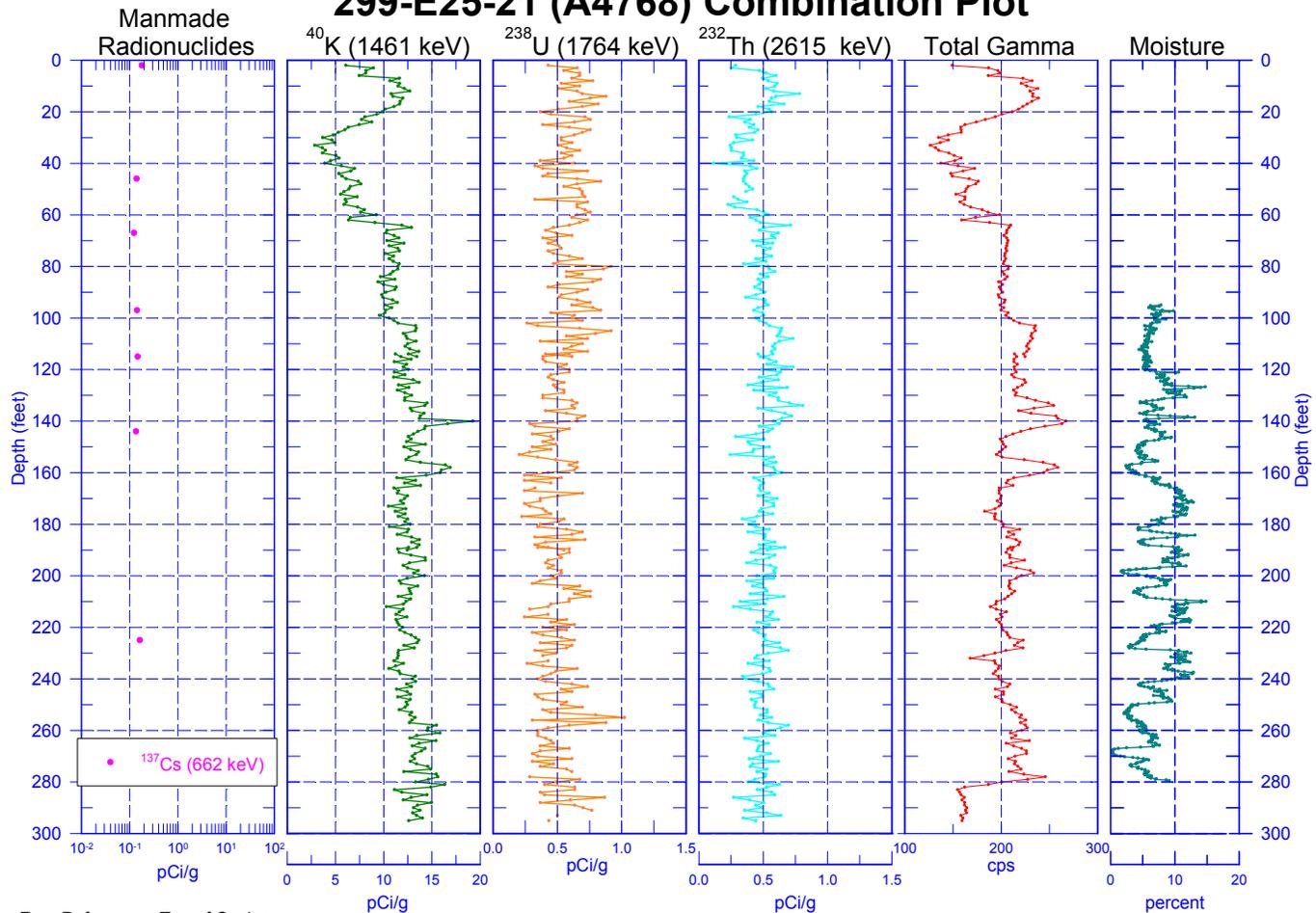
Zero Reference = Top of Casing



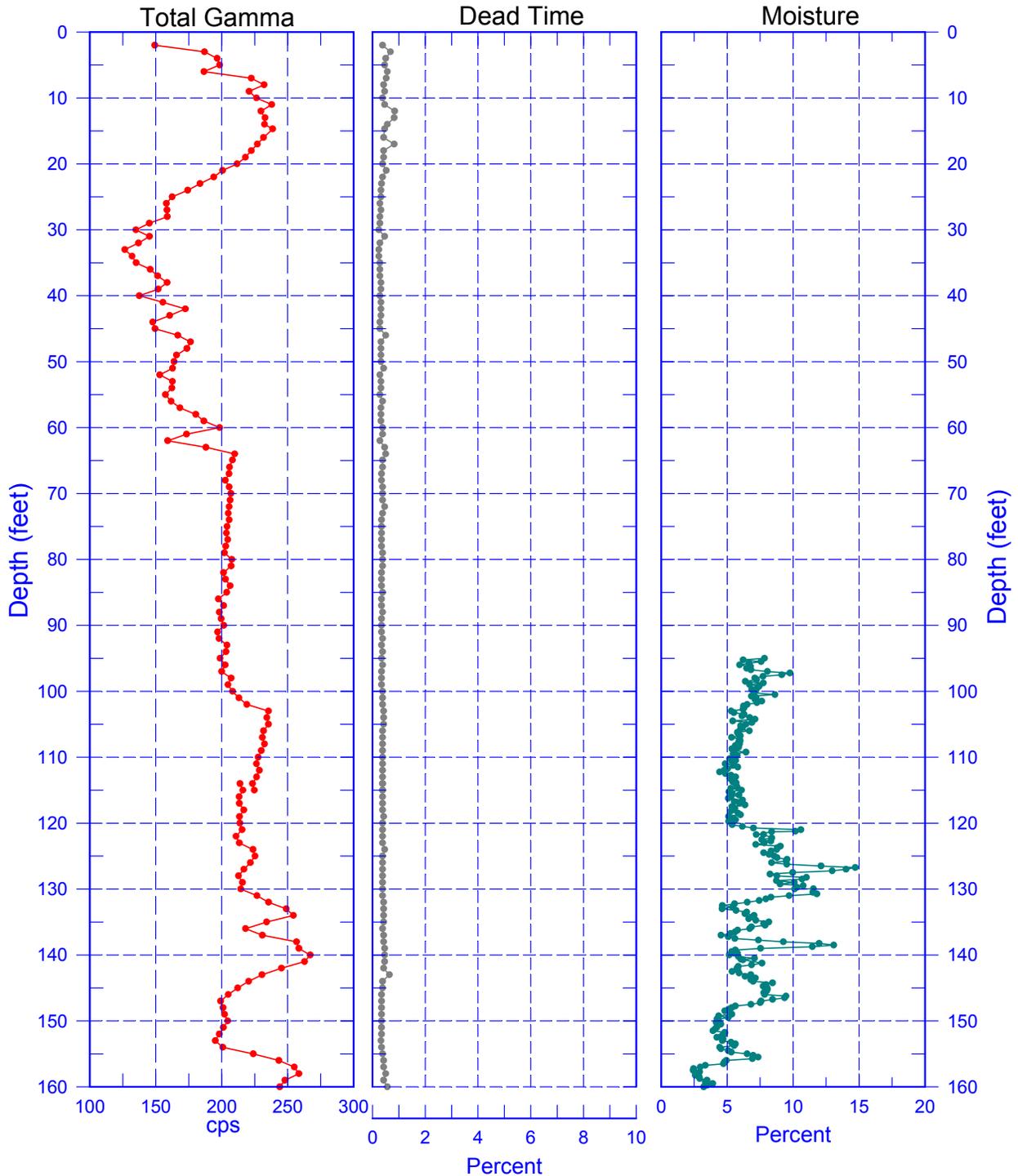




299-E25-21 (A4768) Combination Plot

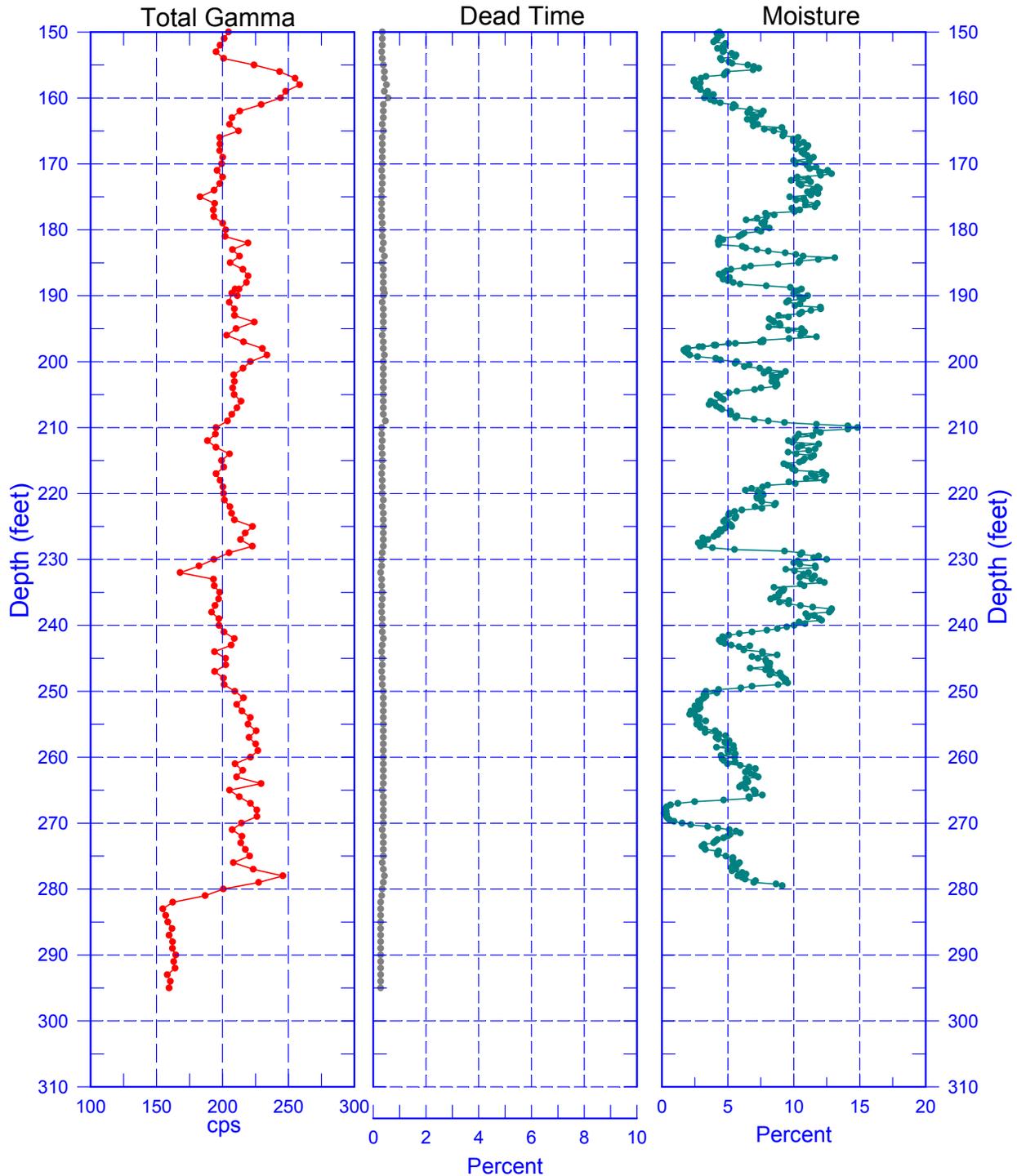


299-E25-21 (A4768) Total Gamma, Dead Time & Moisture



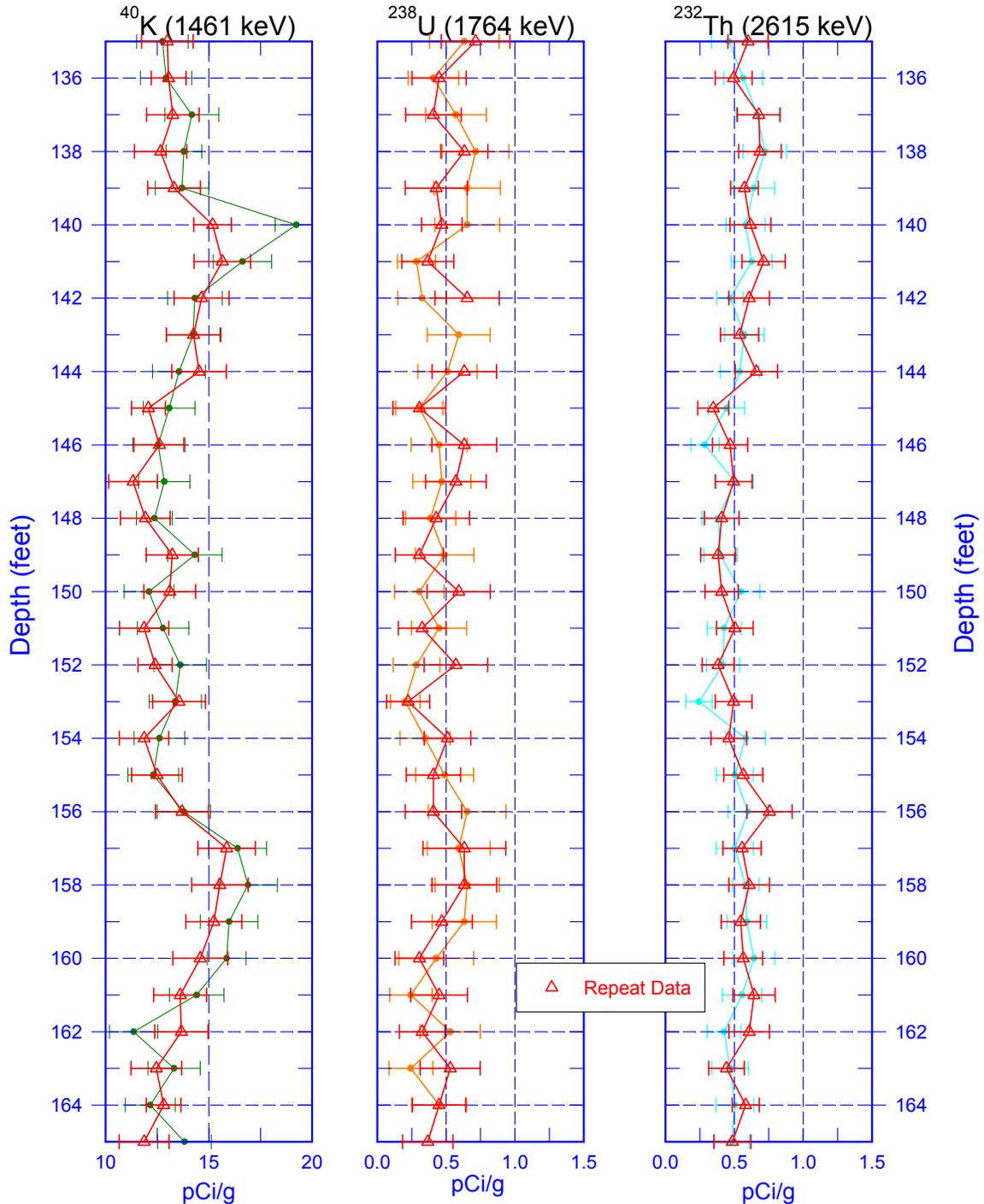
Reference - Top of Casing

299-E25-21 (A4768) Total Gamma, Dead Time & Moisture



Reference - Top of Casing

299-E25-21 (A4768) Repeat of Natural Gamma Logs



Zero Reference = Top of Casing

299-E25-21 (A4768) Repeat of Moisture

